

Appl. No. 10/632,788
Response Dated June 14, 2005
Reply to Office action dated March 15, 2005

REMARKS/ARGUMENTS

Applicants have received and carefully reviewed the Final Office Action of the Examiner mailed March 15, 2005. Claims 1-27 remain pending. Reconsideration and reexamination are respectfully requested.

Rejection under 35 U.S.C. § 103(a)

Claims 1-3, 5-9, 12-15, 21-23, and 25-27 are rejected as being unpatentable over Pittman (US 6,123,147). Applicants respectfully traverse the rejection.

The Examiner asserts that it would have been obvious to eliminate the modulation of the heating unit taught by Pittman during the dehumidification operation because it has been held that omission of an element and its function in a combination where the remaining elements perform the same functions as before involves only routine skill in the art, citing *In re Karlson*, 136 USPQ 184. Applicants submit that the facts of the instant case are distinguished from those in *Karlson*.

In *Karlson*, the asserted obvious modification to the Shuldener reference was that of omitting a perforated tube and screen through which chemicals are introduced to a tank. Shuldener taught that any chemical not dissolved before it reaches the screen is suspended and dissolves within a few minutes. The claims in question recited a tank defining a clear and unobstructed interior space for feeding chemicals into a solution. The board stated that it would not be unobvious to eliminate the screen and filler tube of Shuldener if it was desired to introduce the solution into the tank in some other manner, and that the water circulation and entrainment of chemical solution in the Shuldener device would still function in the same manner without the screen and filler tube. The board pointed out that Shuldener teaches the screen as intercepting any chemical that has not dissolved by the time it reaches the screen, which may occur when chemical is poured in fast, thus the filler tube and screen are elements of a "preferred" embodiment that "may be" provided.

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The facts in *Karlson* differ from the instant case because in *Karlson*, the element to be omitted (filler tube and screen), while providing a preferred way of adding chemicals to the tank, are not taught as required. The Shuldener reference appears to teach that using the filler tube and screen provide an advantage under certain circumstances, i.e. when chemical is added fast. It would appear, however, that when chemical was not added fast, the tank without the tube and screen would still function to add the chemical to the tank. In *Karlson*, the court stated that "no change in the functions of the remaining elements would result from the omission of the screen and filler tubes." In contrast, the system of Pittman appears to require modulation of the heating unit in order to achieve the specifically stated outcome of not changing the room temperature while dehumidification is performed. In *Karlson*, the desired result of the reference system, that of introducing chemicals to water, would occur with or without the filler tube and screen. Omission of the filler tube and screen elements thus would not appear to alter the function of the remaining elements. In Pittman, however, the desired result of the system is to not alter the room temperature while dehumidification is performed, which Pittman teaches as requiring modulation of the heating unit. The omission of the modulation step would likely cause the system to fail to achieve the desired result. The facts of the instant application thus are distinguished from *Karlson*.

MPEP 2144.04 II. A. states that the omission of an element and its function is obvious if the function of the element is not desired. The MPEP cites *In re Larson*, 340 F.2d 965, 144 USPQ 347 (CCPA 1965) for stating that the omission of specific elements "would have been obvious if this feature was not desired." Thus the omission of specific elements or features that are desired is not obvious. Applicants submit that omitting the modulation features from the system of Pittman would change the functions of the remaining elements and would remove a desired outcome of the method taught by Pittman.

MPEP 2143.01 cites *Al-Site Corp. v. VSI Int'l Inc.*, 50 USPQ2d 1161 (Fed. Cir. 1999), for stating that the level of skill in the art cannot be relied upon to provide the suggestion to combine references, and quotes *In re Kotzab*, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000) as stating that the "test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill

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in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." The MPEP states that the mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination; and that although a prior art device may be capable of being modified to run the way the apparatus is claimed, there must be a suggestion or motivation in the reference to do so, citing *In re Mills*, 16 USPQ2d 1430 (Fed. Cir. 1990).

It appears the Examiner is relying on the above improper reasoning for modifying the Pittman system and method. The prior art does not provide any reasoning for why one of ordinary skill in the art would have been motivated to modify the system and method of Pittman to omit the modulation of the hot water heating unit. The Examiner asserts that the omission would have been obvious because the omission of an element and its function in a combination where the remaining elements perform the same functions involves only routine skill in the art. The Examiner has not indicated why one of ordinary skill in the art would have been motivated to make such a modification to the system and method of Pittman. In the absence of any statements as to why one of ordinary skill in the art would have been motivated to modify Pittman, it appears the Examiner is relying on Applicants' specification, the mere fact that Pittman could be modified, or the fact that the Pittman system may be capable of operating according to the Examiner's asserted modification, none of which are proper bases for obviousness. If this rejection is maintained, Applicants respectfully request the Examiner provide specific reasoning as to why one of ordinary skill in the art would have been motivated to modify Pittman.

Applicants submit that even in a situation in which the omission of an element would not alter the function of the remaining elements, one of ordinary skill in the art would still require some motivation, guidance, or suggestion to make the omission. In the instant situation, omitting the modulation of the heating unit in Pittman would alter the function of the remaining elements, and additionally, there is no motivation, aside from Applicants' own specification, for making such a modification to Pittman.

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Further, the modification to Pittman asserted as obvious by the Examiner is the omission of a portion of a method step, not the omission of the entire method step. Pittman teaches the method step of operating the hot water heater coil (heating unit) in a modulated state to ensure the room temperature will not be changed while dehumidification is being performed. The modification asserted as obvious by the Examiner is the omission of only the modulation part of the operation step. If the entire step were to be omitted, no heating would be performed, which is contrary to the teachings of Pittman. Thus, the facts of the instant case differ from those of *Karlson*.

Additionally, in an unpublished opinion by the Board of Patent Appeals and Interferences, *Ex parte Kronenthal*, Appeal No. 97-0774, Application No. 08/121,525, the Board stated that "[n]either *Karlson* nor *Kuhle*, however, supports the notion of eliminating just a selected portion of an element based on the improper hindsight benefit of appellants' own disclosure." Applicants submit that the Board's statement supports the argument that *Karlson* does not apply to situations in which only a portion of an element (method step) is omitted.

Pittman teaches adjusting the flow of hot water to the reheat coil to match the temperature of the air exiting the refrigeration coil with the temperature of the air entering the refrigeration. Pittman also teaches that using the reheat coil to match the inlet and outlet temperature "ensures that the room temperature will not be changed while dehumidification is being performed." See column 1, lines 44-52. Pittman teaches "[m]easurement of two temperatures and a simple control of the circulation of hot water to equalize those temperatures." Emphasis added; see column 2, lines 11-13. Pittman also teaches a simpler embodiment in which the inlet and outlet temperature monitors can be eliminated and replaced by a metering valve that is preset to control the amount of water circulation through the reheat coil so that when the pump is operating and the refrigeration coil is being cooled, the air temperature upstream of the refrigeration coil substantially equals the air temperature downstream from the reheat coil. See column 2, lines 49-56. Pittman thus already provides a main embodiment with temperature-based modulation of water flow to the reheat coil, and an alternative, simpler embodiment that uses a metering valve to modulate the water flow, with both embodiments achieving the desired

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result of maintaining the room temperature during dehumidification. Applicants submit that one of ordinary skill in the art, upon reading Pittman, would understand that maintaining the room air temperature during the dehumidification process is the desired result of Pittman's system.

Omitting a portion of the element and method step of modulating the inlet and outlet temperatures of the Pittman system would eliminate the desired outcome (feature) of ensuring the room temperature does not change while dehumidification is being performed. Such a modification to omit a portion of a desired feature is not obvious according to MPEP 2144.04 and *In re Larson*.

Modifying the method of Pittman to omit modulating the heating coil would cause the method to no longer achieve the desired result specifically taught by Pittman. Thus, the modification of Pittman's method asserted by the Examiner leads away from Pittman's specific teachings and desired results. Applicants submit that the only motivation for one of ordinary skill in the art to make such a modification comes from the instant specification. The Board, in the unpublished opinion cited above, stated that, with respect to the asserted elimination of a portion of an element in a reference, "it is not seen how one of ordinary skill in the art would have been motivated to do so without the hindsight benefit of appellants' disclosure in view of the fact that such a modification would have led away from Schoenholz's teachings."

In contrast to Pittman, independent claim 1 recites a method of controlling an HVAC system including the specific method steps of:

determining whether the humidity in an inside space is above a predetermined humidity threshold, and if so,
operating both the heating unit and the cooling unit in their "on" states such that the heating unit and the cooling unit each provide a relatively constant, unmodulated, thermal output.

The method of claim 1 recites operating the heating unit such that the thermal output is not modulated. Pittman specifically teaches modulating the output of the heating. Pittman thus do not teach the method steps of claim 1. Additionally, there is no motivation for one of ordinary

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skill in the art to eliminate a specific step taught by Pittman because doing such would remove a specific desired outcome of Pittman's method.

Independent claim 5 recites a method including the step of:

operating both the heating unit and the cooling unit in their unmodulated "on" states such that the thermal output produced by the heating unit is not modulated to match the thermal output of the cooling unit when the heating unit and cooling unit are both in their "on" state.

Independent claim 9 recites a method including the step of:

selecting a "drying" mode if the humidity is above the predetermined humidity threshold and the temperature is below a temperature that is related to the cooling set point temperature, wherein in the "drying" mode the method includes operating both the heating unit and the cooling unit in their "on" states such that the combined thermal output of the heating unit and the cooling unit is not zero or substantially zero.

Thus, in the methods of claims 5 and 9, the heating unit is not modulated, which is opposite to the teachings of Pittman. Independent claim 12 recites an HVAC system having a heating unit and a cooling unit sized to heat and cool an inside space under an expected heating and cooling load, respectively, in which a controller is adapted to operate both the heating unit and a cooling unit in un-modulated states that are not dependent on an output temperature of air provided by the HVAC system to the inside space. As noted above, Pittman teaches using a temperature sensor to modulate the heat provided by a water heater "so as to return as much heat to the air in the plenum 10 as was removed by the refrigeration coils 20". Pittman does not teach using the water heater to heat the inside space under an expected heat load for the building.

If one were to operate the heating unit in Pittman's system in the "on" state and eliminate the modulation of the heating unit, the result would likely be an increase or decrease in the room air temperature. Applicants submit that because Pittman specifically states his system is designed to ensure that the room temperature will not be changed while dehumidification is being performed, removing the heating unit modulation would result in a room temperature change and thus would change the functions of the remaining elements of the system. Removing

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the heating unit modulation from the system of Pittman would necessarily change the function of the system and would not provide the desired outcome.

Pittman's system has two specific functions: (1) dehumidification, and (2) maintaining the room air temperature. While eliminating the heating unit modulation would allow the system to provide dehumidification, this is only one of the two specific functions of the Pittman system. The court in *Karlson* specifically states that it is obvious to omit elements from a reference if no change in the functions of the remaining elements would result. In the system of Pittman, omission of the heating unit modulation would result in the continuous operation of the heating unit until dehumidification was accomplished, likely resulting in an increase in room air temperature. In contrast, Pittman specifically teaches controlling the heating unit and turning it off when the room air temperature matches the temperature set point. See column 6, lines 21-24.

Contrary to the Examiner's assertion, eliminating the heating unit modulation of Pittman would greatly alter the function of the system and would cause the system to fail to provide one of the stated desired results. Thus, elimination of the modulation of the heating unit cannot be seen to be an obvious modification requiring only routine skill in the art. Additionally, because Pittman specifically teaches why his system is designed to modulate the heating unit, there is no motivation for one of ordinary skill in the art to remove this essential part of Pittman's system. The only motivation for such a modification appears to come from Applicants' own specification, which is improper.

The Examiner also asserts that it would have been obvious to modify the system of Pittman such that the heating system was sized to meet the expected heating loads in order to eliminate the need for any additional heating unit. Applicants submit that one of ordinary skill in the art, upon reading Pittman, would have no motivation for modifying the residential hot water heater taught by Pittman to be sized to heat an inside space under an expected heating load that necessarily changes with the outside conditions. Pittman teaches that the system provides short term heating by using the reheat coil without the refrigeration coil. See column 2, lines 37-39. Applicants submit that while Pittman teaches using the hot water heating coil for short term heating, one of ordinary skill in the art would have no reason to enlarge the residential hot water

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heating coil such that it would be capable of meeting the expected heating load of a house or other building. Pittman teaches his system for retrofitting or adding to an existing residential air conditioning system in a house that has a hot water heater. Pittman also teaches that residential air conditioning systems provide refrigeration coils within a plenum of a forced air furnace, with the furnace blower circulating air across the refrigeration coils. See column 1, lines 13-15. Thus, one of ordinary skill in the art, upon reading Pittman, would understand that the Pittman system is to be added to a conventional residential heating and cooling system including a furnace and air conditioner. With a conventional forced air furnace already present, there is no motivation for one of ordinary skill in the art to modify the system and method of Pittman and modify the reheat coil and hot water heater to meet the heat load of the house.

The "reheat coil 30" taught by Pittman consists of a section of pipe split off the hot water supply line, as shown in FIG. 1. The heat source is the hot water from the residential hot water heater. Applicants submit that in order for the "reheat coil" of Pittman to be sized to heat an inside space under an expected heating load, significant enlargement of the water heater itself would likely be required in order to provide the level of heat necessary to meet an expected heating load. Applicants submit that such modification would be much more complicated and likely more expensive than simply providing an alternative heating unit, such as a conventional furnace, and thus the modification would not have been obvious to one of ordinary skill in the art. As an example of the level of modification required, consider the type and size of boiler required for a hot water heating system. Applicants submit that such modification of the residential hot water heater of Pittman would not have been obvious to one of ordinary skill in the art.

In response to Applicants' previous arguments, the Examiner asserts that to remove the control of the modulating valve during the dehumidification operation and eliminate the more accurate temperature control of the inside space would involve only routine skill in the art and would not produce an unobvious result. As stated above, such modification of the Pittman system removes one of the specific goals and desired functions of the Pittman system, and is thus not obvious. The asserted modification does not merely remove a control mechanism, but

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changes the operation of Pittman's system. As noted above, one of the specific results of the Pittman method is that of dehumidification without changing the room temperature. Removing the controls of Pittman would change the results of the method, thus changing the method itself. Applicants submit that changing a method such that the results are different is not an unobvious modification, and would require a specific motivation to make such a change. The only motivation for modifying Pittman appears to be found in Applicants' own specification.

The Examiner has repeatedly argued that modifying Pittman to achieve Applicants' invention would have been obvious, but has not provided reasoning as to why one of ordinary skill in the art, armed only with the Pittman reference, would have made such a modification. Applicants submit that in view of the specific teachings in Pittman of the desirability of modulating the heating coil to assure the room temperature will not be changed during dehumidification, there is no motivation for one to remove the modulation.

Pittman fail to teach or suggest each and every element of the claims, and there is no motivation for one of ordinary skill in the art to modify the system and method of Pittman to achieve the claimed method. Withdrawal of the rejection is respectfully requested.

Claims 19 and 20 are rejected as being unpatentable over Pittman in view of admitted prior art. The Examiner asserts that it would have been obvious to one of ordinary skill in the art to modify the system of Pittman to include the use of a computer to control the heating and cooling units where the control program would inherently be stored on computer-readable medium. Applicants respectfully traverse the rejection.

As Applicants argued in the previous response, claims 19 and 20 are directed to a computer-readable medium having stored thereon a computer program for controlling an HVAC system, while Pittman teaches a system for retrofitting an existing air conditioning system and residential hot water heater. The Examiner has provided no reasons for why one of ordinary skill in the art would be motivated to modify the system of Pittman to include a computer program for controlling an HVAC system. In the absence of any reasoning why one would have been motivated to make such a modification to the system of Pittman, the instant claims cannot be seen to be obvious over Pittman. Additionally, claims 19 and 20 recite the computer-readable

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medium having a computer program for controlling a controller to determine if the temperature of an inside space is above a predetermined temperature, and if so, to activate both the heating and cooling unit of the HVAC system such that the activated heating unit provides an unmodulated heat output. As stated above, Pittman specifically teaches modulating the heat output to ensure the room temperature does not change during dehumidification. There is no motivation for one of ordinary skill in the art to provide the Pittman system with a computer-readable medium having a computer program that controls a controller to activate the heating unit such that it provides an unmodulated heat output.

Claims 4, 10, and 11 are rejected as being unpatentable over Pittman in view of Alford. Claims 4, 10, and 11 depend from independent claims 1 and 9, respectively. For the same reasons discussed above, as well as other reasons, dependent claims 4, 10 and 11 are also believed to be in condition for allowance.

Claims 16-18 and 24 are rejected as being unpatentable over Pittman in view of Coffman. The Examiner asserts that it would have been obvious to one of ordinary skill in the art to modify the system of Pittman to use a forced air furnace in order to provide the heating rather than a hot water coil in view of the teachings of Coffman of using a forced air furnace to provide heating to an inside space. Applicants respectfully traverse the rejection.

Coffman teaches a combined heating and humidifying system in which water is sprayed into the warm air leaving the furnace. See column 1, lines 15-19 and FIG. 1. Applicants submit that neither reference provides any motivation, suggestion, or guidance for combining their teachings. The references are directed to very different systems and methods. Where Pittman teaches using a hot water coil to heat air that has been dehumidified, Coffman teaches to humidify the air leaving a forced air furnace. The methods and systems are so different in their structure, function and results, that their combination appears to be contrary to the teachings of each reference. And even if one were to combine the teachings of Pittman and Coffman, one would not achieve the claimed invention. If one were to substitute the forced air furnace of Coffman for the hot water coil of Pittman, one would likely achieve a system in which an air conditioner dehumidifies air, and a furnace with a water spray attachment warms and humidifies

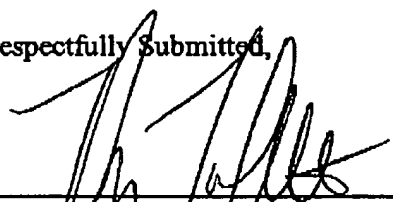
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the air. Applicants submit that there is no reason for such a modification. Withdrawal of the rejection is respectfully requested.

Reconsideration and reexamination are respectfully requested. It is submitted that, in light of the above remarks, all pending claims 1-27 are now in condition for allowance. If a telephone interview would be of assistance, please contact the undersigned attorney at 612-359-9348.

Respectfully Submitted,

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Brian M. Tufte, Reg. No. 38,638
CROMPTON, SEAGER & TUFTE, LLC
1221 Nicollet Avenue, Suite 800
Minneapolis, Minnesota 55403-2420
Telephone: (612) 677-9050
Facsimile: (612) 359-9349